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Date: June 02, 2008 Name: Gustavo Siller, Jr., Reg. 32,305 Signature: /Gustavo Siller, Jr./

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of: Mitsumori, et al.

Appln. No.: 10/650,393

Filed: August 27, 2003

For: ULTRASONIC CLEANER AND WET
TREATMENT NOZZLE COMPRISING THE
SAME

Docket No: 9281-4664 (CK US99909/Kaijo)

Examiner: Frankie L. Stinson

Art Unit: 1792

Conf. No.: 6750

RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Non-Final Office Action dated December 12, 2007 in the above-referenced application, please reconsider the rejection in view of the below remarks, which are believed to explain why all the claims are in condition for allowance.

Amendment to the Claims begin on page 2 of this paper.

Remarks begin on page 5 of this paper.

Amendments to the Claims

The following listing of claims will replace all prior listings in this application.

CLAIMS

1.-15. (Cancelled)

16. (Previously Presented) The wet treatment nozzle according to claim 27, wherein the weight is provided on at least one of an exterior wall surface or an interior wall surface of the weighted housing in the ultrasonic cleaner.

17. (Previously Presented) The wet treatment nozzle according to claim 27, wherein the weight is provided on the interior bottom surface of the weighted housing in an area where vibration caused by the ultrasonic transducer is not prevented in the ultrasonic cleaner.

18. (Previously Presented) The wet treatment nozzle according to claim 27, wherein the weight is formed by changing the thickness of the weighted housing in the ultrasonic cleaner.

19. (Previously Presented) The wet treatment nozzle according to claim 27, wherein the weight is provided on the entire surface of the wall of the weighted housing in the ultrasonic cleaner.

20.-26. (Cancelled)

27. (Previously Presented) A wet treatment nozzle comprising:
an ultrasonic cleaner comprising a housing, an ultrasonic transducer placed on an interior bottom surface of the housing, and a weight provided on the housing;
an introduction passage for introducing a treatment liquid on an exterior side of the ultrasonic cleaner;

an exhaust passage which exhausts the treatment liquid on an other exterior side of the ultrasonic cleaner after a wet treatment of an object to be treated, the exhaust passage exhausting the treatment liquid that wet treated the object;

wherein the ultrasonic cleaner includes a flow path along the housing between the introduction passage and the exhaust passage that guides the treatment liquid to wet treat the object to be treated, such that the treatment liquid is exposed to atmosphere between the housing and the object to be treated,

wherein the weight minimizes propagation of energy from the ultrasonic transducer to a wall of the housing by shifting the characteristic frequency of the wall of the housing; and

a pressure controller operable to maintain a difference between a pressure of the treatment liquid in contact with the object to be treated and an atmospheric pressure, so that the treatment liquid in contact with the object does not flow to the outside of the flow path.

28. (Previously Presented) The wet treatment nozzle according to claim 27, wherein the housing has a U shaped cross-section.

29. (Previously Presented) The wet treatment nozzle according to claim 27, wherein the shifting of the characteristic frequency of the wall of the housing minimizes a resonance of the wall of the housing.

30. (Previously Presented) The wet treatment nozzle according to claim 27, wherein the flow path is configured such that only the treatment liquid contacts the object to be treated between the introduction passage and the exhaust passage.

31. (Previously Presented) The wet treatment nozzle according to Claim 27, wherein the ultrasonic cleaner guides the treatment liquid introduced from the introduction passage such that fresh treatment liquid is always supplied to the object to be treated.

32. (Previously Presented) The wet treatment nozzle according to Claim 27, wherein the weight comprises a ring-shaped weight disposed around the housing.

33. (Currently Amended) A wet treatment nozzle comprising:
an ultrasonic cleaner comprising a housing, an ultrasonic transducer placed on a bottom surface of the housing, and a weight on the housing;
an introduction passage associated with a first frame member, the introduction passage configured to introduce a treatment liquid on a first side of the ultrasonic cleaner; and
an exhaust passage associated with a second frame member, the exhaust passage configured to exhaust the treatment liquid on a second side of the ultrasonic cleaner after a wet treatment of an object to be treated,
wherein the ultrasonic cleaner, while vibrating, is configured to guide the treatment liquid along a bottom surface of the housing to wet treat the object, and
wherein the weight separates the first and second frame members from the housing and is configured to minimize propagation of energy from the ultrasonic transducer to the housing and to the frame members by shifting the characteristic frequency of the housing.
34. (Original) The wet treatment nozzle according to claim 33, wherein the housing and the first and second frame members cooperate to define a flow path, the flow path configured such that only the treatment liquid contacts the object to be treated between the first frame member and the second frame member.
35. (Original) The wet treatment nozzle according to claim 34 further comprising a pressure controller operable to maintain a difference between a pressure of the treatment liquid in contact with the object and an atmospheric pressure, so that the treatment liquid in contact with the object does not flow to the outside of the flow path.
36. (Original) The wet treatment nozzle according to Claim 33, wherein the weight comprises a ring-shaped weight disposed around the housing.

REMARKS

Claims 16-19 and 27-35 are pending in the application. Claims 16-19 and 27-32 are allowed while claims 33, 34, and 36 are rejected. Claim 35 is objected to as being dependent from a rejected base claim. Claim 33 is amended. Based on the below remarks, the Applicants respectfully submit that the application is in condition for allowance.

35 U.S.C. §103(a) Rejections

Only claims 33, 34, and 36 were rejected in the Office Action, under 35 U.S.C. § 103(a), as unpatentable over U.S. Patent No. 4,069,541 ("Williams") in view of either U.S. Patent No. 2,848,672 ("Harris") or U.S. Patent No. 6,153,964 ("Olsson"). Because these references, alone or as combined, fail to teach all the features of claims 33, 34, and 36, the Applicants respectfully submit that they are patentable over the same.

Claim 33 recites a wet treatment nozzle that includes:

an ultrasonic cleaner comprising a housing, an ultrasonic transducer placed on a bottom surface of the housing, and a weight on the housing;

an introduction passage associated with a first frame member, the introduction passage configured to introduce a treatment liquid on a first side of the ultrasonic cleaner; and

an exhaust passage associated with a second frame member, the exhaust passage configured to exhaust the treatment liquid on a second side of the ultrasonic cleaner after a wet treatment of an object to be treated,

wherein the ultrasonic cleaner, while vibrating, is configured to guide the treatment liquid along a bottom surface of the housing to wet treat the object, and

wherein the weight separates the first and second frame members from the housing and is configured to minimize propagation of energy from the ultrasonic transducer to the housing and to the frame members by shifting the characteristic frequency of the housing.

Williams discloses a vacuum cleaner that happens to use oscillating means, such as a transducer, but is otherwise very different from the claimed structure recited in claim 33. As a preliminary note, the Office Action does not specify where in Williams a housing is disclosed because a housing seems to be absent. In the recited structure of claim 33, it is "on a bottom surface of the housing" that the ultrasonic transducer is

located. Williams clearly fails to disclose these features. Williams discloses a manifold 25 for introduction of liquid, an elongate bar member 18', and a vacuum nozzle 15' that vacuums up the liquid sheet beneath or across the surface 19' of the elongate bar member 18'. Col. 3, lines 31-36. The ultrasonic transducer at 22 is connected to the elongate bar member 19, but the latter is hardly a housing, and the transducer is positioned on top of (not on a bottom surface of) the elongate bar member 18.

Furthermore, Williams fails to disclose an introduction passage that is "associated with a first frame member," an exhaust passage that is "associated with a second frame member," and it also fails to disclose that "the weight separates the first and second frame members from the housing." In contrast, Williams discloses parts of a vacuum, e.g., a manifold 25 and a vacuum nozzle 15'.

As the Office Action concedes, Williams fails to disclose the weight, but the Applicants contend that all the references fail to disclose the weight attached to the housing as recited by claim 33. The Office Action cites to Harris (as at 33, 35) and Olsson (as at 9) as disclosing a weight associated with sonic arrangements "for controlling the propagation of the ultrasonic waves." Element 9 of Olsson, however, is a "reaction body" that is "similarly manufactured from a light metal, preferably aluminum." Col. 2, lines 57-59. In the context of the rest of Olsson, the reaction body is employed to alter the design, e.g., in shape and size, of the ultrasonic sealing device. A "light metal" such as aluminum that changes the shape and size of a device does not disclose "a weight on the housing" or that the weight "separates the first and second frame members." Furthermore, element 9 of Olsson is designed to obtain a pure resonance of the horn 7. In contrast, "the weight on the housing" in claim 33 is not intended to obtain the resonance frequency but is intended to suppress the propagation of ultrasonic energy to the wall surface. Further in contrast, the counterweights 50, 51 of Harris are located at longitudinal ends of a tube 48. Col. 3, lines 73-75. While the tube 48 may be compared with a housing, Harris discloses no frame members that are separated by the weight in location.

For at least these reasons, claim 33 is patentable over William, Olsson, and Harris. Likewise, claims 34-36 are patentable over the cited art by virtue of their dependency from claim 33.

Claim 34 further recites that the first and second frame members cooperate to define a flow path. The flow path is configured such that only the treatment liquid contacts the object to be treated between the first and second frame member. The Office Action cites to Williams for these features, but Williams clearly discloses that the vacuum (cleaning apparatus) touches the object to be cleaned as part of its cleaning process. "Preferably the elongate member 18 has a curved lower surface 19 for engaging carpet or some other surface to be cleaned." Col. 2, lines 48-50. Accordingly the only structure that comes into contact with the transducer is intended to engage the cleaning surface, teaching against the recited feature of claim 34.

Claim 35 was objected to as being dependent from a rejected base claim. As per the above discussion, the Applicants respectfully submit that claim 33 is allowable and that this objection be withdrawn.

SUMMARY

Applicants respectfully submit that all the pending claims are in condition for allowance. If for any reason the Examiner is unable to allow the application in the next Office Action and believes that a discussion would be helpful to resolve any remaining issues, he is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

/Gustavo Siller, Jr./
Gustavo Siller, Jr.
Registration No. 32,305
Attorney for Applicants

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BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, ILLINOIS 60610
(312) 321-4200